What is claimed is:

1. A method for classifying signals occurring in a frequency band, comprising steps of:
   a. generating data for one or more attributes of radio frequency energy received in the frequency band over time; and
   b. executing against the data a plurality of classification procedures to identify signals occurring in the frequency band.
2. The method of claim 1, wherein the step of generating data comprises generating signal pulse data for pulses of radio frequency energy detected in the frequency band over time.
3. The method of claim 2, wherein the step of generating signal pulse data comprises computing spectral information representing the radio frequency energy and simultaneously comparing the spectral information with at least two sets of signal pulse characteristics, wherein each set of signal pulse characteristics comprises ranges for at least one of center frequency, duration and bandwidth, and outputting signal pulse data for pulses that meet any one of the sets of signal pulse characteristics.
4. The method of claim 3, and further comprising the step of accumulating over a time interval signal pulse data for signal pulses detected in the frequency band, wherein the accumulated signal pulse data comprises one or more of the start time, center frequency, bandwidth and duration for each detected signal pulse.
5. The method of claim 4, wherein the step of executing comprises executing each of the plurality of the classification procedures, one at a time, against the accumulated signal pulse data.
6. The method of claim 5, and further comprising the step of designating for one or more signal pulses in the accumulated signal pulse data an identifier corresponding to the classification procedure that achieves a sufficient match to the one or more signal pulses.

7. The method of claim 6, wherein the step of accumulating comprises accumulating signal pulse data for a plurality of time intervals, and wherein the step of executing comprises executing each of the plurality of classification procedures against the accumulated signal pulse data for each time interval, one time interval at a time.

8. The method of claim 7, wherein the step of executing comprises executing a classification procedure that compares a timing template describing at least one time period between signal pulses that satisfy defined ranges of at least one of bandwidth, duration and center frequency against the accumulated data to identify a particular signal occurring in the frequency band.

9. The method of claim 8, and further comprising the step of tracking the number of matches and misses of signal pulses with respect to the timing template.

10. The method of claim 9, wherein for a classification procedure, further comprising the step of comparing the results of the signal pulse data comparisons with test requirements that are initially relatively more rigorous to provide initial indications that a corresponding particular signal is occurring and that become less rigorous after the initial indications.

11. The method of claim 10, and further comprising the step of declaring a classification procedure has identified a particular signal when the number of matches of signal pulses with respect to a timing template achieves a first threshold and subsequently determining that the number of matches of signal pulses with respect to signals pulses expected to match achieves a second threshold, wherein the second threshold is less rigorous than the first threshold.

12. The method of claim 9, and further comprising the step of declaring a classification procedure has identified a particular signal when the

number of matches of signal pulses with respect to the timing template at least achieves a threshold.

13. The method of claim 4, and further comprising the step of accumulating one or more histograms from the accumulated signal pulse data that represent trends over time for one or more of the center frequency, bandwidth, duration and time between pulses of radio frequency energy detected in the frequency band.

14. The method of claim 13, wherein the step of accumulating one or more histograms comprises building one or more histograms selected from the group consisting of: a center frequency histogram that tracks a percentage of time a given center frequency was observed for detected signal pulses, a bandwidth histogram that tracks the percentage of time a given bandwidth was observed for detected signal pulses, a pulse duration histogram that tracks a percentage of time a given duration or durations was observed for detected signal pulses, a time between pulses histogram that tracks a percentage of time that a given time duration or durations was observed between signal pulses and a number of active transmissions histogram that tracks when several different signal pulses simultaneously occur.

15. The method of claim 13, and further comprising the step of selecting a subset of the plurality of classification procedures that correspond to signals that are likely occurring in the frequency band based on the histograms.

16. The method of claim 15, wherein the step of executing comprises executing the subset of the plurality of classification procedures against the accumulated data.

17. The method of claim 1, wherein the step of executing comprises executing a classification procedure that compares a timing template describing at least one time period between signal pulses that satisfy defined ranges of at least one of bandwidth, duration and center

frequency against the accumulated data to identify a particular signal occurring in the frequency band.

18. The method of claim 1, wherein the step of executing comprises executing a classification procedure that compares a power template describing power versus frequency characteristics against power versus frequency data derived from the received radio frequency energy to identify a signal occurring in the frequency band.

19. The method of claim 18, wherein the step of executing comprises executing a classification procedure that compares each of a plurality of power templates describing power versus frequency characteristics against the power versus frequency data, wherein a particular signal is declared to be occurring when the power versus frequency data matches any one of the plurality of power templates.

20. The method of claim 19, wherein the step of executing comprises executing a classification procedure that compares each of the plurality of power templates against power versus frequency data for multiple sampling intervals, and wherein the particular signal is determined to be occurring when the power versus frequency data matches at least one of the plurality of power templates for each of a predetermined number of time intervals of power versus frequency data.

21. The method of claim 19, wherein the step of executing comprises executing a classification procedure that compares each of the plurality of power templates against power versus frequency data for multiple time intervals, and wherein the particular signal is determined to be occurring when the power versus frequency data matches all of the power templates over the multiple time intervals.

22. The method of claim 21, wherein the step of executing comprises executing a classification procedure that requires a match to a different one of the plurality of power templates during each of the multiple time intervals.

23. The method of claim 18, wherein the step of executing a classification procedure comprises comparing a power template describing average power versus frequency characteristics against average power versus frequency data for a time interval derived from the radio frequency energy occurring in the frequency band.

24. The method of claim 18, wherein the step of executing comprises comparing a power template describing maximum power versus frequency characteristics against maximum power versus frequency data for a time interval derived from the radio frequency energy occurring in the frequency band.

25. The method of claim 18, wherein the step of executing comprises executing a classification procedure that compares a template of Fast Fourier Transform (FFT) data for a portion of a known signal pulse against spectral information for a portion of a signal pulse determined to occur in the frequency band.

26. The method of claim 25, wherein the step of executing comprises comparing a template describing spectral information for beginning portion of a known signal against FFT data for the beginning portion of a detected signal pulse.

27. The method of claim 1, wherein the step of generating data comprises capturing baseband modulated digital samples associated with received radio frequency energy.

28. The method of claim 27, wherein the step of executing comprises executing a classification procedure that compares a template of baseband modulated digital samples for a portion of signal pulse for a known signal against the captured baseband modulated digital samples.

29. A processor readable medium encoded with instructions that, when executed by a processor, cause the processor to classify signals occurring in a frequency band, comprising a step of executing against data for one or more attributes for radio frequency energy a plurality of

classification procedures each of which is dedicated to identifying a particular signal occurring in a frequency band.

30. The processor medium of claim 29, and further comprising instructions that, when executed by the processor, cause the processor to accumulate over a time interval signal pulse data for signal pulses detected in the frequency band, wherein the accumulated signal pulse data comprises one or more of the start time, center frequency, bandwidth and duration for each detected signal pulse.

31. The processor readable medium of claim 30, and further comprising instructions that, when executed by the processor, cause the processor to execute each of the plurality of the classification procedures, one at a time, against the accumulated signal pulse data.

32. The processor readable medium of claim 32, and further comprising instructions that, when executed by the processor, cause the processor to designate for one or more signal pulses in the accumulated signal pulse data an identifier corresponding to the classification procedure that achieves a sufficient match to the one or more signal pulses.

33. The processor readable medium of claim 32, and further comprising instructions that, when executed by the processor, cause the processor to accumulate signal pulse data for a plurality of time intervals, and to execute each of the plurality of classification procedures against the accumulated signal pulse data for each time interval, one time interval at a time.

34. The processor readable medium of claim 31, and further comprising instructions that, when executed by the processor, cause the processor to execute a classification procedure that compares a timing template describing at least one time period between signal pulses that satisfy defined ranges of at least one of bandwidth, duration and center frequency against the accumulated data to identify a particular signal occurring in the frequency band.

35. The processor readable medium of claim 34, and further comprising instructions that, when executed by the processor, cause the processor to track the number of matches and misses of signal pulses with respect to the timing template.

36. The processor readable medium of claim 35, and further comprising instructions that, when executed by the processor, cause the processor to, for a classification procedure, compare the results of the signal pulse data comparison with test requirements that are initially relatively more rigorous to provide initial indications that a corresponding particular signal is occurring and that become less rigorous after the initial indications.

37. The processor readable medium of claim 36, and further comprising instructions that, when executed by the processor, cause the processor to declare a classification procedure has identified a particular signal when the number of matches of signal pulses with respect to a timing template achieves a first threshold and subsequently determining that the number of matches of signal pulses with respect to signals pulses expected to match achieves a second threshold, wherein the second threshold is less rigorous than the first threshold.

38. The processor readable medium of claim 35, and further comprising instructions that, when executed by the processor, cause the processor to declare a classification procedure has identified a particular signal when the number of matches of signal pulses with respect to the timing template at least achieves a threshold.

39. The processor readable medium of claim 33, and further comprising instructions that, when executed by the processor, cause the processor to accumulate one or more histograms from the accumulated signal pulse data that represent trends over time for one or more of the center frequency, bandwidth, duration and time between pulses of radio frequency energy detected in the frequency band.

40. The processor readable medium of claim 39, and further comprising instructions that, when executed by the processor, cause the processor to build one or more histograms selected from the group consisting of: a center frequency histogram that tracks a percentage of time a given center frequency was observed for detected signal pulses, a bandwidth histogram that tracks the percentage of time a given bandwidth was observed for detected signal pulses, a pulse duration histogram that tracks a percentage of time a given duration or durations was observed for detected signal pulses, a time between pulses histogram that tracks a percentage of time that a given time duration or durations was observed between signal pulses and a number of active transmissions histogram that tracks when several different signal pulses simultaneously occur.

41. The processor readable medium of claim 39, and further comprising instructions that, when executed by the processor, cause the processor to select a subset of the plurality of classification procedures that correspond to signals that are likely occurring in the frequency band based on the histograms.

42. The processor readable medium of claim 41, and further comprising instructions that, when executed by the processor, cause the processor to execute the subset of the plurality of classification procedures against the accumulated data.

43. The processor readable medium of claim 30, and further comprising instructions that, when executed by the processor, cause the processor to execute a classification procedure that that compares a timing template describing at least one time period between signal pulses that satisfy defined ranges of at least one of bandwidth, duration and center frequency against the accumulated data to identify a particular signal occurring in the frequency band.

44. The processor readable medium of claim 30, and further comprising instructions that, when executed by the processor, cause the processor

to execute a classification procedure that compares a power template describing power versus frequency characteristics against power versus frequency data derived from the received radio frequency energy to identify a signal occurring in the frequency band.

45. The processor readable medium of claim 44, and further comprising instructions that, when executed by the processor, cause the processor to execute a classification procedure that compares each of a plurality of power templates describing power versus frequency characteristics against the power versus frequency data, wherein a particular signal is declared to be occurring when the power versus frequency data matches any one of the plurality of power templates.

46. The processor readable medium of claim 45, and further comprising instructions that, when executed by the processor, cause the processor to execute a classification procedure that compares each of the plurality of power templates against power versus frequency data for multiple sampling intervals, and wherein the particular signal is determined to be occurring when the power versus frequency data matches at least one of the plurality of power templates for each of a predetermined number of time intervals of power versus frequency data.

47. The processor readable medium of claim 45, and further comprising instructions that, when executed by the processor, cause the processor to execute a classification procedure that compares each of the plurality of power templates against power versus frequency data for multiple time intervals, and wherein the particular signal is determined to be occurring when the power versus frequency data matches all of the power templates over the multiple time intervals.

48. The processor readable medium of claim 47, and further comprising instructions that, when executed by the processor, cause the processor to execute a classification procedure that requires a match to a different

one of the plurality of power templates during each of the multiple time intervals.

49. A radio device comprising:

a. a radio transceiver that receives radio frequency energy in a radio frequency band in which radio signals of multiple types may be occurring;

b. a Fast Fourier Transform (FFT) circuit coupled to the radio transceiver that converts received samples of the radio frequency energy into power versus frequency data comprising power levels for each of a plurality of frequency bins during an FFT interval;

c. a spectrum analyzer circuit that is coupled to the FFT circuit that generates statistics from the power versus frequency data including at least one of an average power statistic for each frequency bin over a plurality of FFT intervals a maximum power statistic for each frequency bin over a plurality of FFT intervals;

d. a plurality of pulse detectors that are coupled to receive the output of the FFT circuit, each of the pulse detectors being configurable to simultaneously detect signal pulses of radio frequency energy having signal pulse characteristics that fall within configurable ranges for at least one of center frequency, duration and bandwidth from the power versus frequency data, and output signal pulse data for pulses that meet the corresponding signal pulse characteristics; and

e. a processor coupled to accumulate data output by the pulse detectors and the spectrum analyzer circuit and executing a plurality of classification procedures against the accumulated data to identify signals occurring in the frequency band.